



NEW MILLENNIUM PROGRAM

An Overview

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NASA VISION FOR 21st CENTURY SPACE AND EARTH SCIENCE EXPLORATION

Using advanced new technologies that will provide revolutionary capabilities, spacecraft will

- Be launched more frequently
- Be smaller and lighter, and more cost-effective
- Have highly efficient power systems
- Have integrated avionics systems
- Use new measurement techniques with microensors and miniaturized devices
- Use “intelligent” flight systems to autonomously navigate and carry out mission operations

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EXPLORATION FOR THE 21ST CENTURY

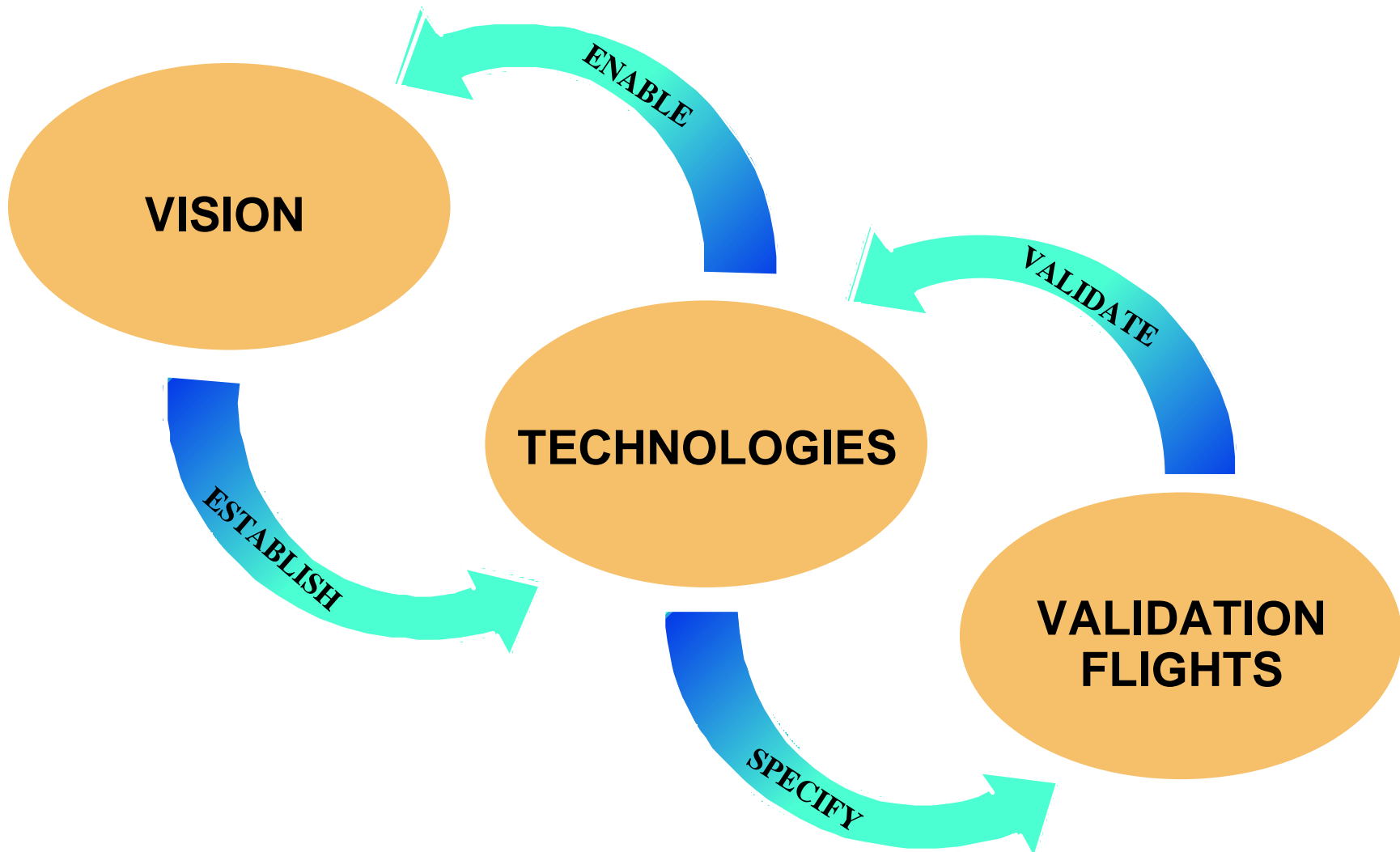
Goals

Revolutionize NASA's space and Earth science programs to achieve exciting and frequent missions in the 21st Century through:

1. Developing and validating revolutionary technologies
2. Reducing development times and life cycle mission costs
3. Enabling highly capable and agile spacecraft
4. Promoting nationwide teaming and coordination

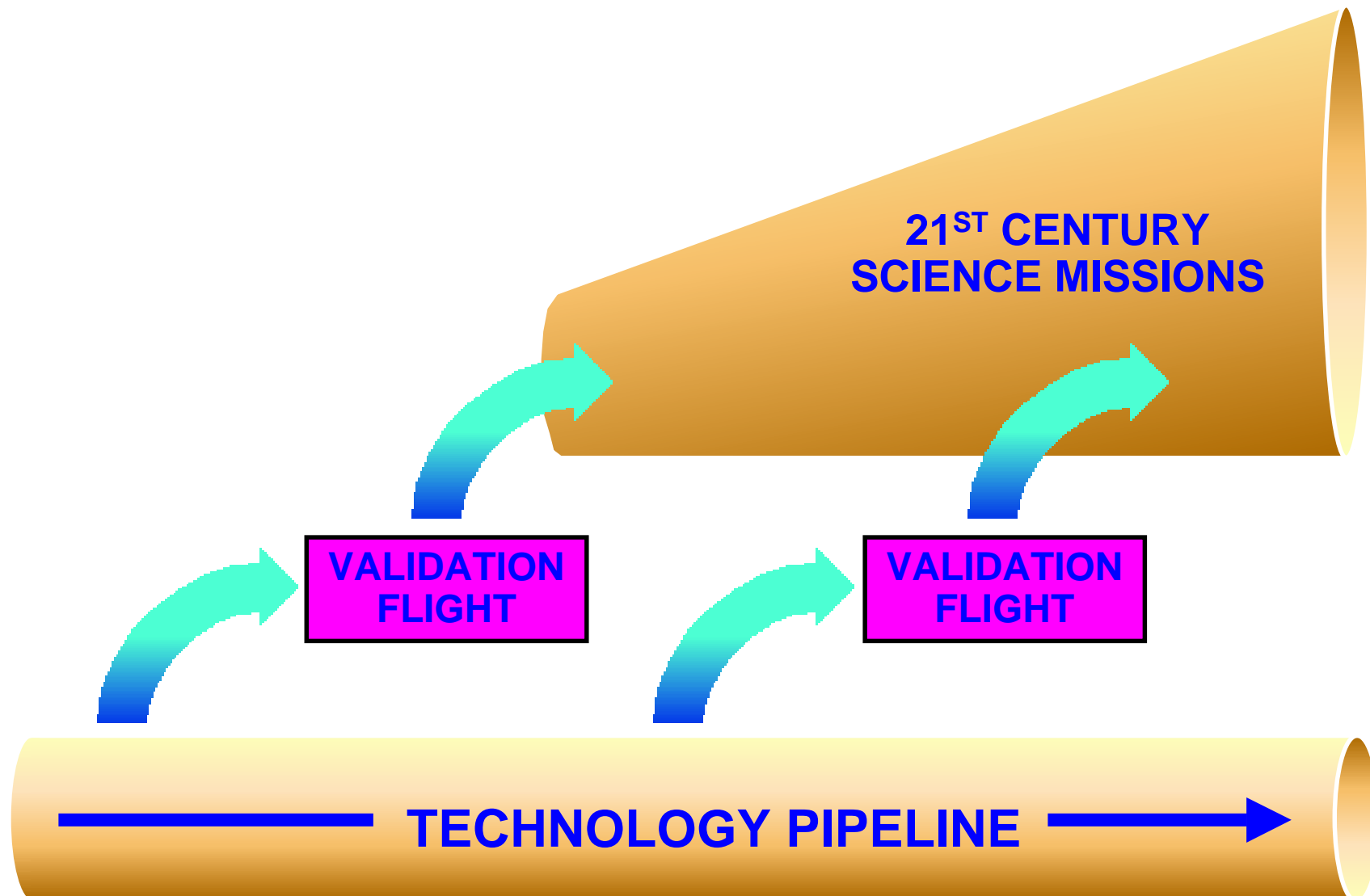


PROGRAM PROCESS





Technology Infusion Into 21st Century Science Missions



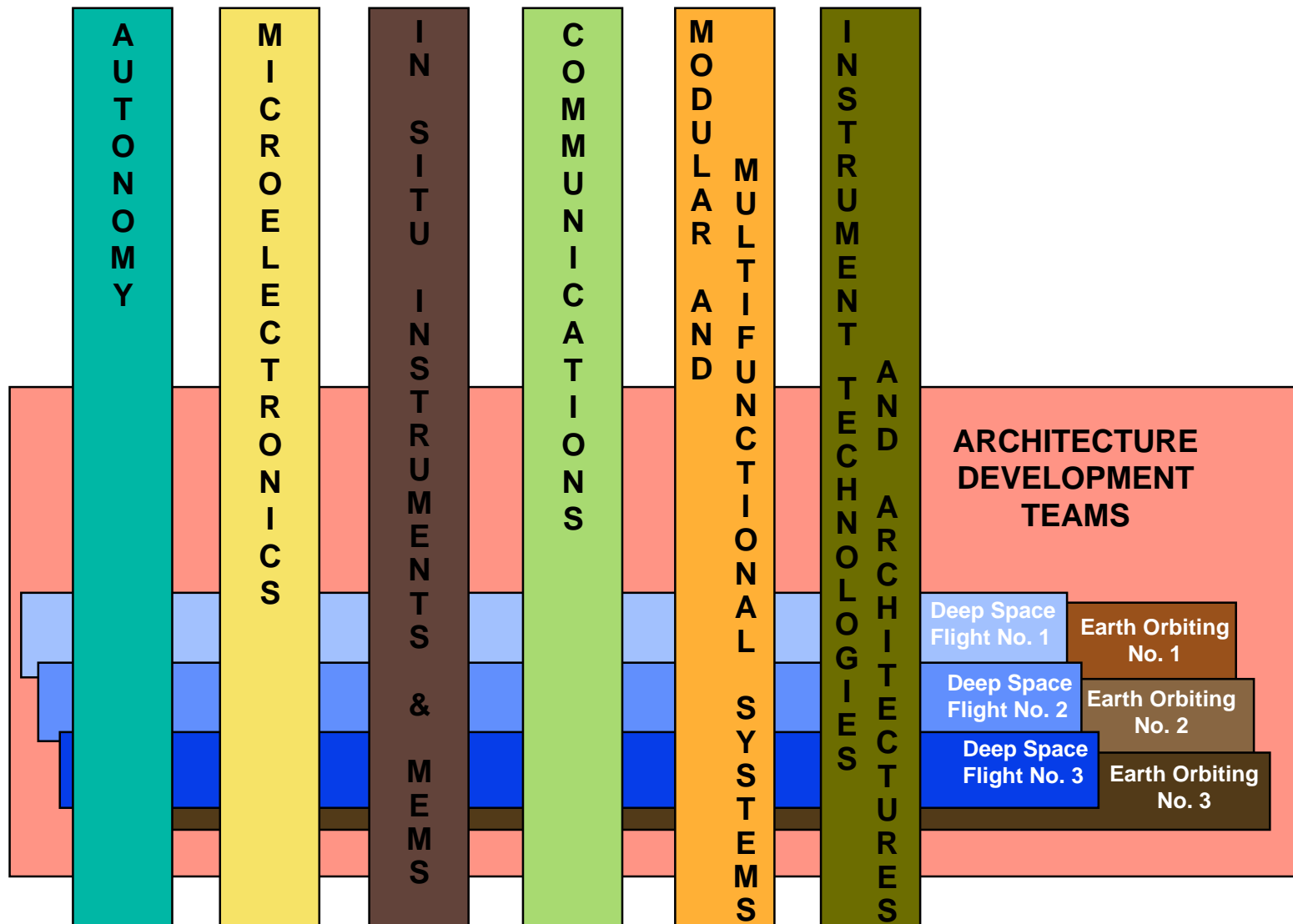


Integrated Product Development Teams (IPDTs)

- Develop a vision and roadmap of technologies to enable 21st century science missions
- Form cross-organizational partnerships to leverage nation's technology development programs
- Recommend technologies and validation plans for NMP flights
- Deliver technologies to NMP flights (as members of the Flight Teams)
- Analyze and document validation data and disseminate results to potential users

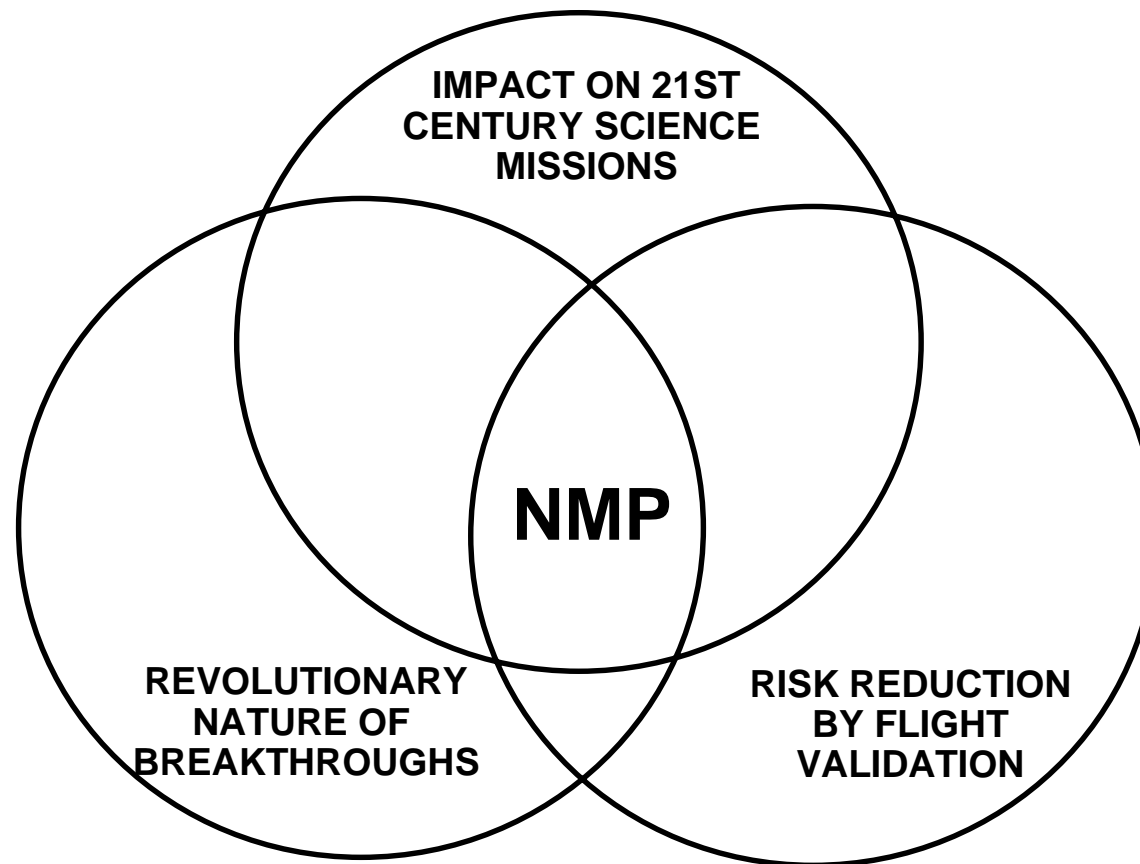


Integrated Product Development Teams





PROGRAM FOCUS



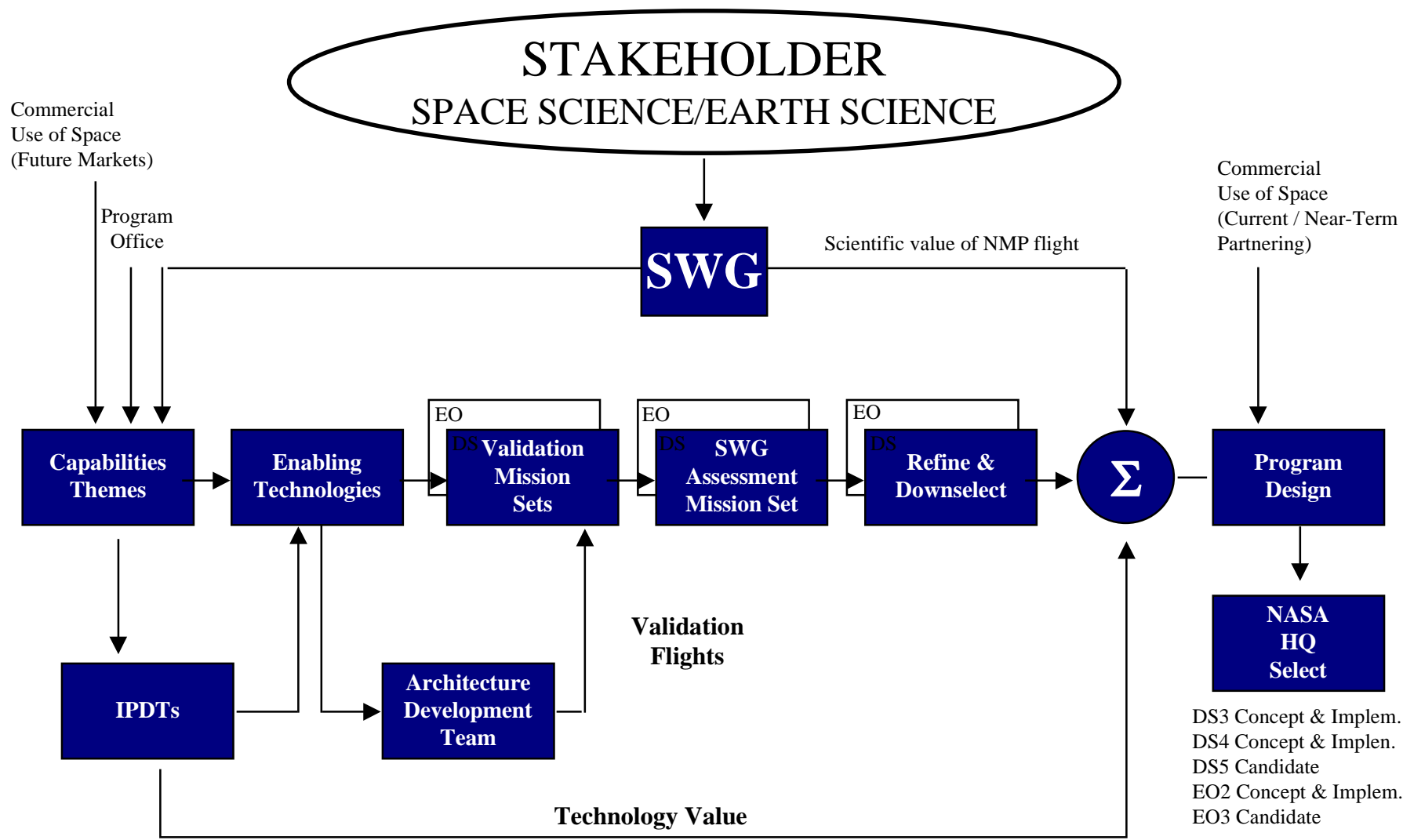


TECHNOLOGY ASSESSMENT CRITERIA

- Potential breadth of impact on 21st century missions.
Is it critical for many missions?
- Revolutionary nature of breakthrough.
Does it provide orders-of-magnitude improvement?
- Risk reduction offered by flight validation.
Is flight validation necessary to ensure incorporation of technology into future missions?



NMP Mission Definition Process





TECHNOLOGY and MISSION SELECTION DECISION-MAKING PROCESS

Step 1: Identify spacecraft capability requirements for 21st century

Step 2: Identify advanced technologies that will provide these capabilities

Step 3: Score the technologies

Step 4: Design validation flights that incorporate these advanced technologies

Step 5: Combine validation flights into candidate mission sets

Step 6: NASA Headquarters selects and approves a mission set



DEEP-SPACE and EARTH-ORBITING VALIDATION FLIGHTS

First Mission Set

Deep Space 1 (DS1)

- Advanced Technologies: Will validate a solar electric propulsion system, an autonomous navigation system, and 10 other advanced technologies
- Test Track: Fly by of an asteroid, Mars, and a comet
- Launch Date: July 1998

Deep Space 2 (DS2)

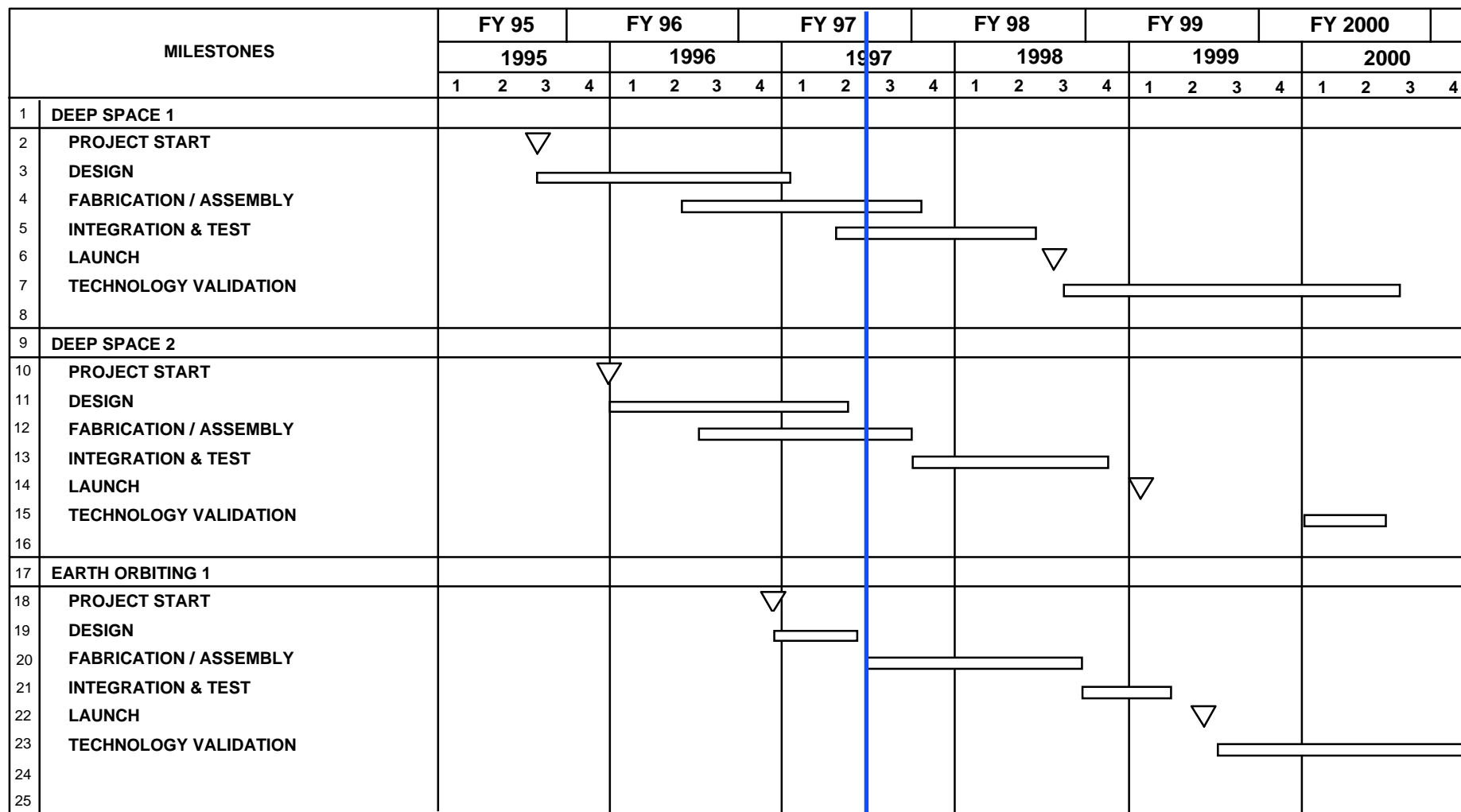
- Advanced Technologies: Will validate miniature network science technologies
- Test Track: Penetrate the surface of Mars
- Launch Date: January 1999

Earth Orbiter 1 (EO1)

- Advanced Technologies: Will validate an Advanced Land Imager, among others
- Test Track: Fly in formation and in same orbit as Landsat 7 satellite
- Launch Date: Mid-1999

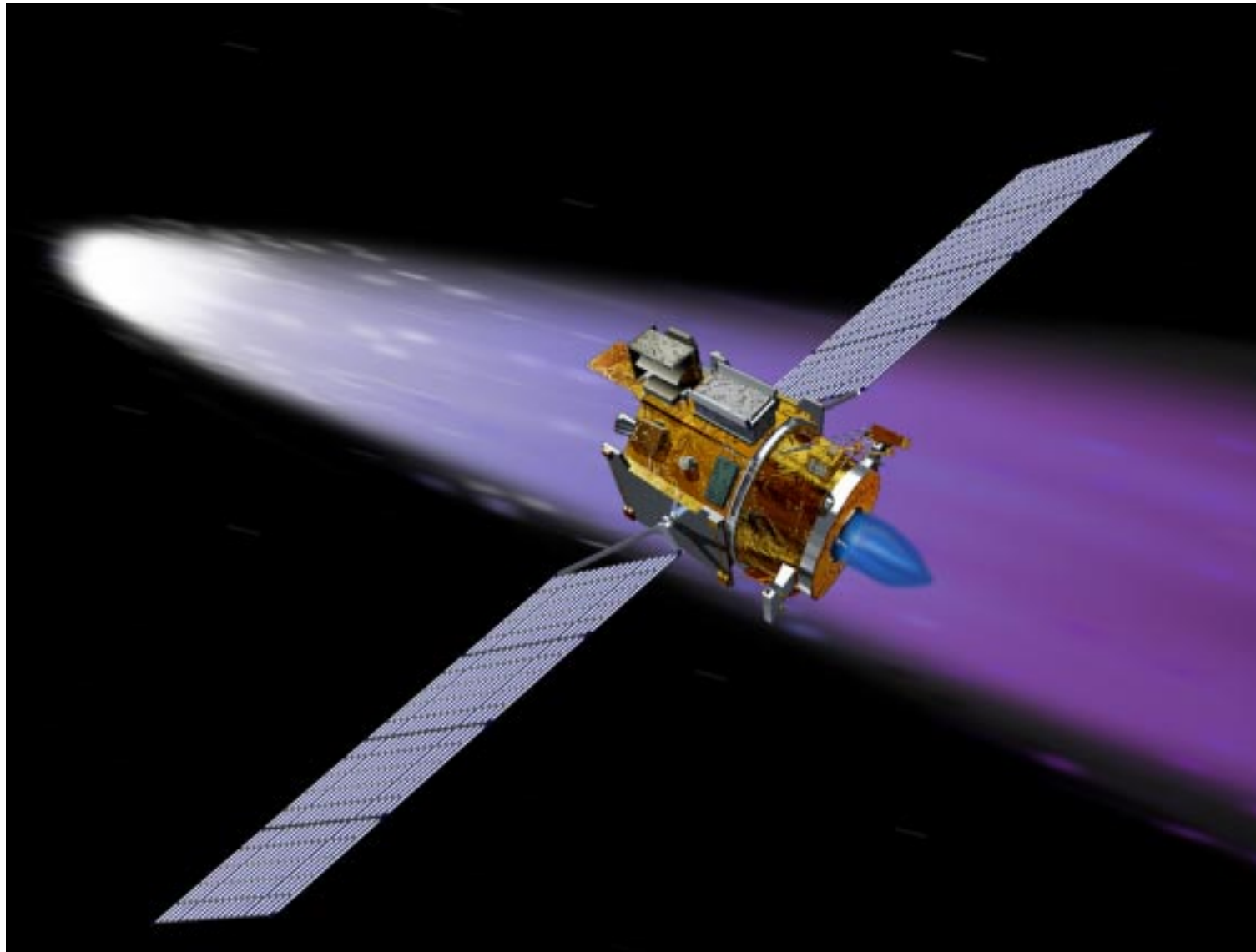


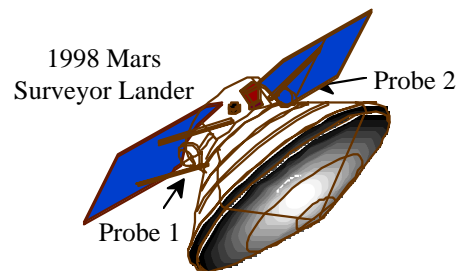
NMP Flight Schedule





Deep Space 1





480 seconds

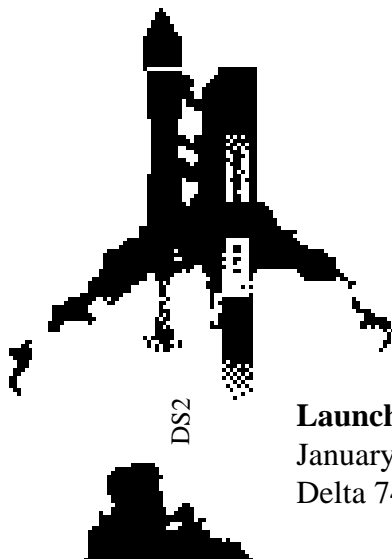
Passive, Single Stage System Non-Erosive Aeroshell

Cruise:

11 Months

Arrive December 3 - 15, 1999

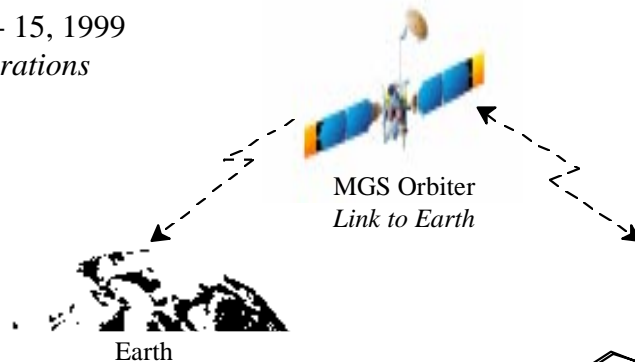
No Microprobe Operations



Launch:

January 3 - 16, 1999

Delta 7425 II Launch Vehicle



Landed Operations:

Primary Mission: 2 Sols

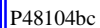
Secondary Mission: 12 Sols

Technology Validation

Water & Mineral Detection

Soil Conductivity

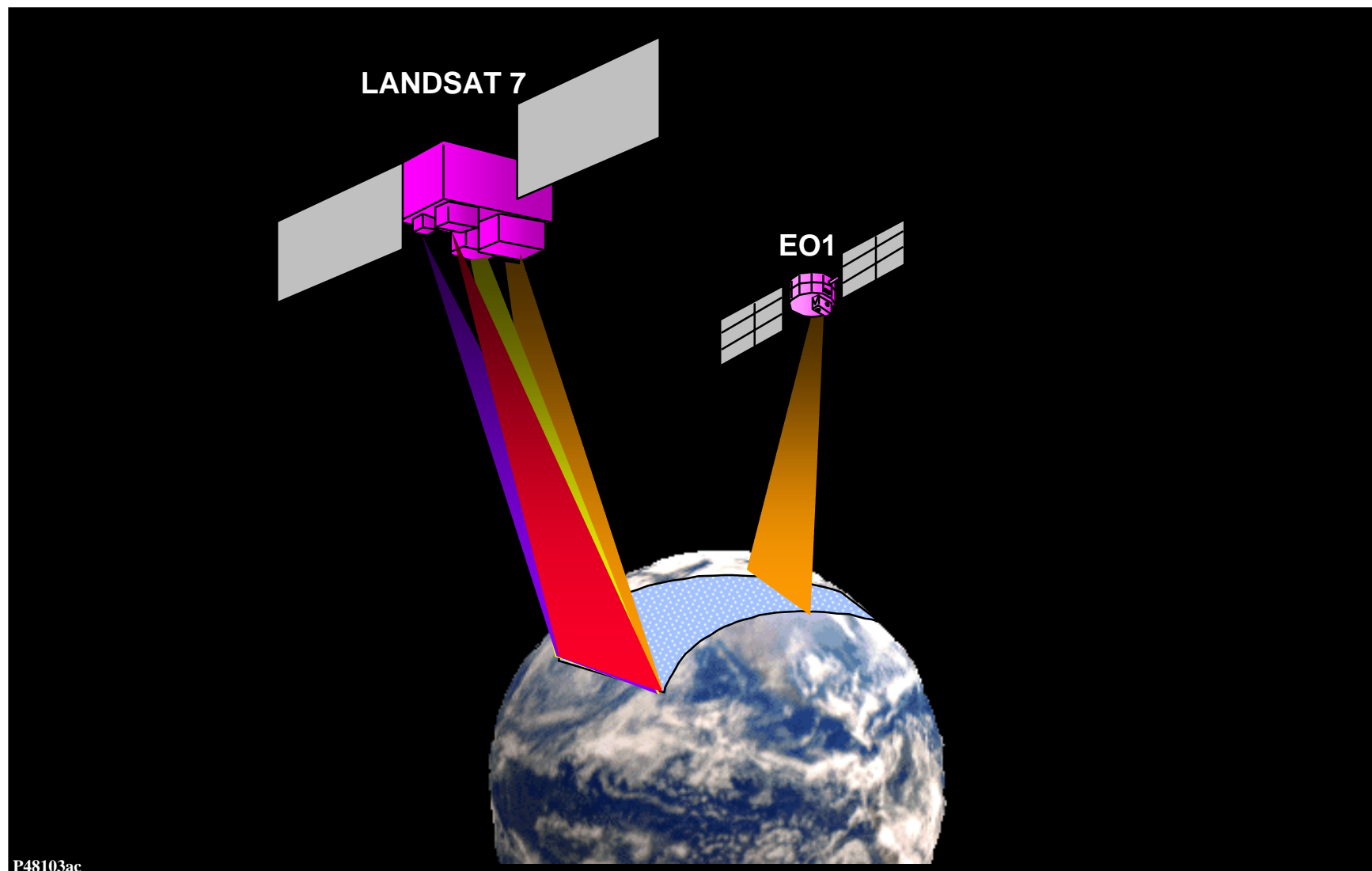
Meteorological Readings





Earth Orbiter 1

Land Imaging Mission



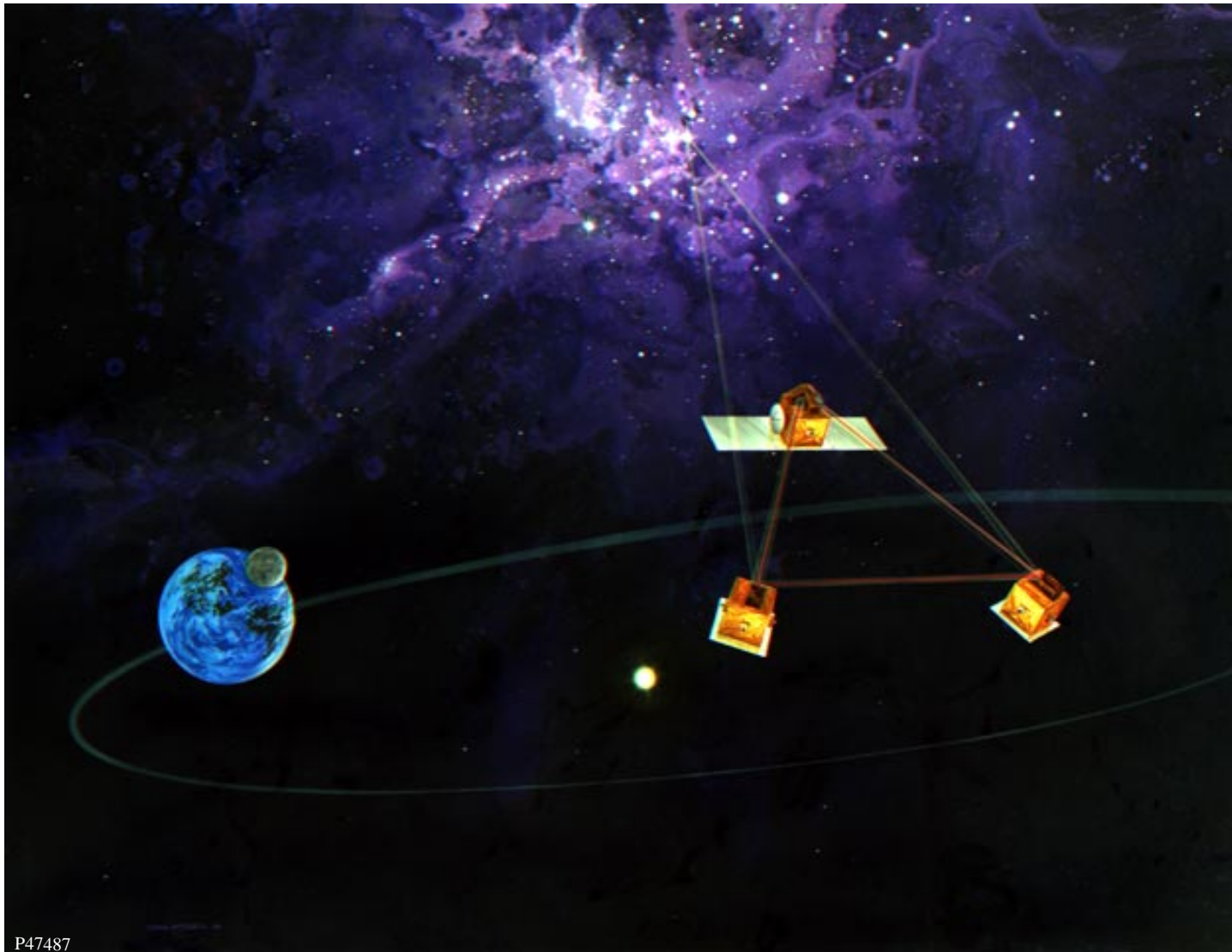
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Deep Space 3



Separated-Spacecraft Optical Interferometer



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